MOBILE FACILITY PROGRAM

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NAVAIR

ENVIRONMENTAL CONTROL UNIT MODEL A/E32C-45A P/N 1559AS400-1

Plan of Action for Fleet Implementation

NEW REQUIREMENTS

- By law, use of R22 will be discontinued
- R22 will still be around for the next 3 years (until 2010) for new equipment and then available for an additional 5 years (until 2015) for rework and or repair of existing equipment
- New MODEL A/E32C-45A ECUs with R134A refrigerant will be delivered to MFP this year, but will not be fleet-fielded until depletion of existing supply stocks

NEW NEEDS (R134A)

- R134A ECUs use P.O.E. oil vice the mineral oil that R22 ECUs use; therefore to avoid contamination of refrigerants the following items are needed:
  - Separate manifold gauges and hoses
  - Separate evacuation/refrigerant recovery machines
  - Separate reclaiming bottles

NEW NEEDS (R134A)

- These items must be conspicuously marked with bright yellow stickers (P/N 1559AS496) warning of R134A Refrigerant Use

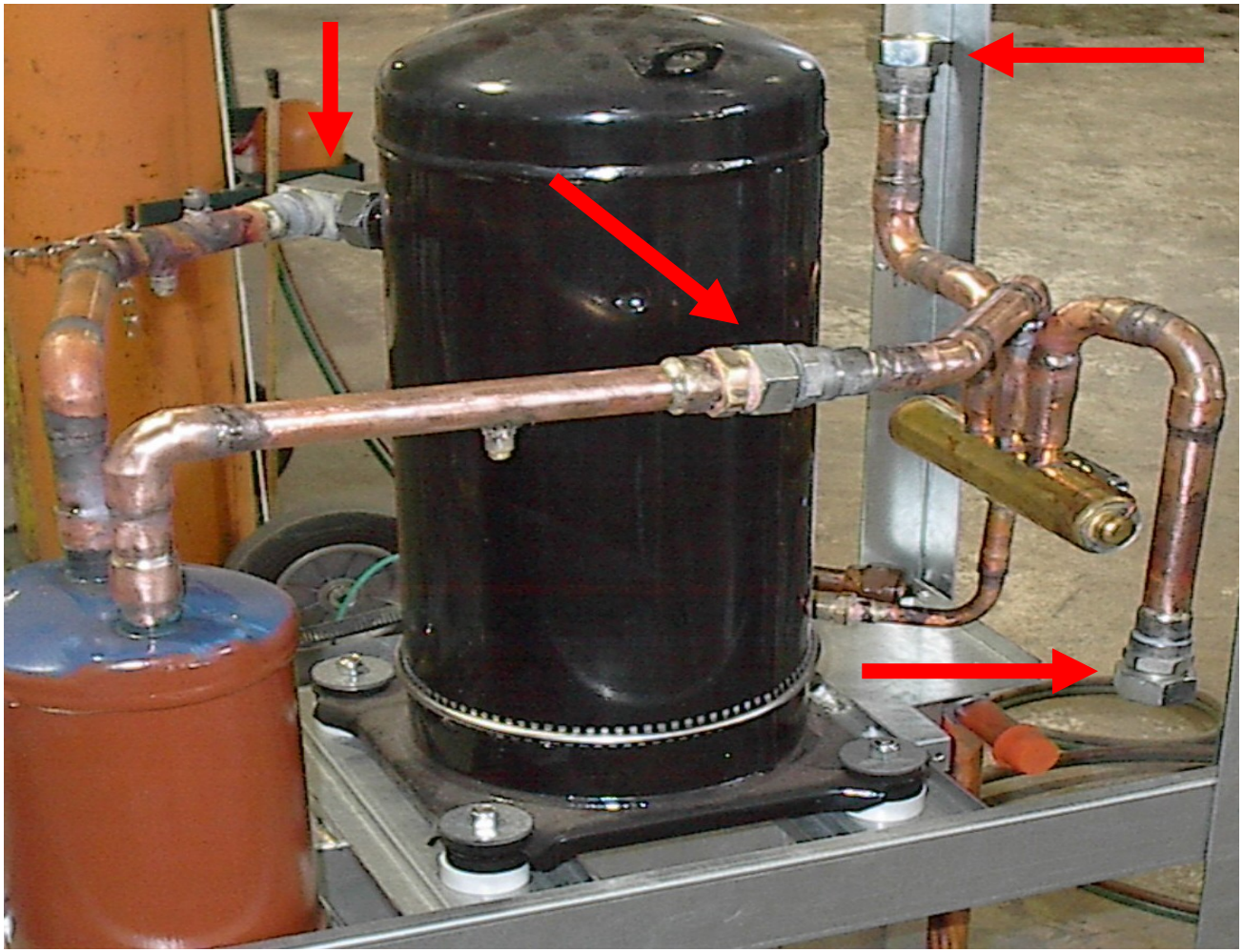
THIS UNIT
CONTAINS
R-134 A
REFRIGERANT

NOT CHANGED

- Refrigerant charging valves were not changed on the new ECUs
  - No need to buy specialized equipment
- The current vacuum pumps used are acceptable for use on either system

QUICK DISCONNECTS

- For ease of repair or rework, the new MODEL A/E32C-45A ECUs have been outfitted with quick-disconnect tube fittings on all major components



QUICK DISCONNECTS

- This upgrade presents a new fleet maintenance logistic need
  - A torque tool set will be needed to properly reconnect quick disconnect fittings
  - A Quick-disconnect Torque Tool Set consists of the following:

NEW NEEDS (QD TORQUE TOOLS)

- 1/2” Sq Dr, 10-150 Ft-Lbs/10-200 NM Torque Wrench (McMaster P/N 5274A13)
- 3/8” Sq Dr, 30-150 In-Lbs Torque Wrench (McMaster P/N 85555A213)

NEW NEEDS (QD TORQUE TOOLS)

- 1/2” Sq Dr, 1-3/8 “ Crowfoot Wrench (McMaster P/N 5831A22)
- 1/2” Sq Dr, 1-1/4” Crowfoot Wrench (McMaster P/N 5831A15)

NEW NEEDS (QD TORQUE TOOLS)

- 1/2” Sq Dr, 1-1/8” Crowfoot Wrench (McMaster P/N 5831A14)
- 1/2”Sq Dr, 15/16” Crowfoot Wrench (McMaster P/N 5831A11

NEW NEEDS (QD TORQUE TOOLS)

- 3/8” Sq Dr, 3/4” Crowfoot Wrench (McMaster P/N 5844A17)
- 3/8” Sq Dr, 5/8” Crowfoot Wrench (McMaster P/N 5844A15)

NEW NEEDS (QD TORQUE TOOLS)

- 3/8” Sq Dr, 7/16” Crowfoot Wrench (McMaster P/N 5844A12)
- 1/2” Sq Dr Female to 3/8” Sq Dr Male socket extension adapter (McMaster P/N 55435A64)

NEW NEEDS (QD TORQUE TOOLS)

- 3/8” Sq Dr Female to 1/2 ” Sq Dr Male socket extension adapter (McMaster P/N 5522A33)
- 3/8” Sq Dr Breaker Bar

NEW NEEDS (QD TORQUE TOOLS)

- In addition to the specified tools given common hand tools will be needed in conjunction with the QD Torque Tools:
  - Appropriate sized Crescent Wrenches

CONVERTING AN R22 UNIT TO AN R134A UNIT

- The following actions would have to be done to convert an existing R22 ECU to an R134 model
  - Recover and dispose R22 refrigerant
  - Change Compressor from a 3 ton to a 6 ton - zr type compressor

CONVERTING AN R22 UNIT TO AN R134A UNIT

- Change all piping and valves, and add Quick-disconnect fittings
- Change condenser fan to higher speed model

CONVERTING AN R22 UNIT TO AN R134A UNIT CONSIDERATIONS

- Cost of new parts will exceed 50% of acquisition price (Old ECU $1600; New ECU approx $3000—could go down if more than the original 1000 are bought)
- Labor to replace these parts would be excessive
- Life expectancy of old ECUs was estimated at 10 years, many are already near and over that age

CONVERTING AN R22 UNIT TO AN R134A UNIT CONCLUSION

- Conversion of an existing R22 ECU to an R134A model is not economically feasible